

## WHAT IS CLAIMED IS:

1. A sterilization apparatus comprising in combination:

- (a) a sealed first chamber capable of withstanding internal pressure and vacuum and having a sealable opening for introducing and removing articles to be sterilized;
- 5 (b) at least one tray disposed within said first chamber for holding items to be sterilized;
- (c) a first microwave radiation generator;
- (d) a first waveguide for directing microwave radiation generated by said first microwave radiation generator onto the articles to be sterilized;
- 10 (e) a sprayer for directing droplets of water onto the articles to be sterilized;
- (f) means for generating steam at greater than one atmosphere of pressure and for introducing the steam into said first chamber;
- 15 (g) a pump for evacuating said first chamber before the steam is introduced thereto and for removing the steam after the sterilization process is completed; and
- (h) means for detecting arcing in said first chamber and for shutting down said first microwave radiation generator in response thereto.
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2. The sterilization apparatus as described in claim 1, further comprising a filter capable of removing pathogens, and means for venting said sealed chamber through said filter.

3. The sterilization apparatus as described in claim 2, wherein said filter comprises a HEPA filter.